

One More Thing on Removing Supply Barriers

by

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for

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Agenda

Remember, I am concerned about these technical barriers to supply:

- 1. The T50 cap.**
- 2. Definition of de minimus other oxygenate.**



Why Raise the T50 Cap?

To Improve Supply



Most of T50 increase due to MTBE rejection.

- C_3 = used to make C_7 alkylate needed to balance T50 is going to petrochemicals.
- Butylenes from refining, petrochemicals and MTBE feedstocks are available.
- The C_8 isoparaffins produced have a T50 greater than the CaRFG3 cap but reduce emissions when added to gasoline.

My Concerns About the De Minimus Definition:



- A **bad** definition can limit supply
- Unintentional oxygenate content
- Basis for de minimus levels for non-ethanol oxygenates
- A **poor** definition could trigger World Trade Organization restraint of trade proceedings

One More Thing, It Must Accommodate Methanol

ASTM D4806-98 allows ethanol to contain 0.5 vol % methanol.

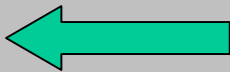
- **Specifications are usually set because the contaminant is frequently there.**
- **Economics 101 virtually guarantees that methanol will be there if:**
 - **California bans MTBE and**
 - **Increases ethanol demand**

Alcohol Specifications

United States of America

Fuel Ethanol

The American Society for Testing and Materials ([A.S.T.M.](http://www.astm.org)) have established a standard D4806-98 for "Denatured fuel ethanol for blending with gasoline, for use as automotive spark-ignition engine fuel", which is generally accepted throughout the industry. For full details and test procedures, reference should be made to the standard, which is available from [A.S.T.M.](http://www.astm.org)

1 Ethanol, %v/v:	92.1 min.	
.		
2 Methanol, %v/v:	0.5 max. (5,000 ppm)	
.		
3 Water, % v/v:	1.0 max. (10,000 ppm)	
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4 Solvent-washed gum, mg/100ml:	5 max. (50 ppm)	
5 Chloride ion, mg/L:	40 max. (40 ppm)	
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6 Copper content, mg/kg:	0.1 max. (0.1 ppm)	
7 Acidity, as acetic acid, %w/w: *	0.007 max. (70 ppm)	
8 Appearance:	Visibly free of suspended or precipitated contaminants (clear and bright).	
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9 Denaturant:	A minimum of 1.96% v/v, and a maximum of 4.76% v/v of natural gasoline, gasoline components or unleaded gasoline.	
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* Note: There was an error in the original standard. It stated "mass % (mg/Litre)" which are not the same units, whereas the relevant analytical method specifies "%w/w."

Recapping

- T50 cap needs to accommodate clean burning C₈ isoparaffins.
- Other areas define unoxygenated as less than 2 vol% oxygenates.
- California needs to justify more stringent caps to avoid trade dispute.
- Line flush, tank bottoms, trace co-production in isooctane/ethanol processes & less soluble ethers all justify increasing the de minimus definition and adopting a no intentional addition standard.